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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/602,654      | 06/25/2003  | Terry A. Todd        | S-99,482            | 1041             |

31972 7590 07/18/2006

UNITED STATES DEPARTMENT OF ENERGY  
1000 INDEPENDENCE AVENUE, S.W.  
ATTN: GC-62 (HQ) MS 6F-067  
WASHINGTON, DC 20585-0162

EXAMINER

FIORITO, JAMES

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

1754

DATE MAILED: 07/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/602,654

**Applicant(s)**

TODD ET AL.

**Examiner**

James A. Fiorito

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-7, 12 and 15 is/are rejected.
- 7) ☒ Claim(s) 4, 8-11, and 13-14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The process step of "recovering the amine carbonate by distillation" is unclear, because the subsequent step calls for regeneration of the amine carbonate, but if it had been recovered according to the claim limitation, then there would be no need for the regeneration of the amine carbonate. It appears applicant intended to claim recovery of the amine by distillation, which would subsequently be regenerated into an amine carbonate. Claim 12 recites the limitation of "at least one different-radical phosphine oxide and dodecane", without stating from which radical phosphine it is supposed to differ from.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1-3, and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Romanovskiy '333 in view of Hartmut Bruschke "Industrial application of membrane separation processes" (Pure & Appl. Chem., Vol. 67 No. 6, pp. 993-1002, 1995).**

Romanovskiy teaches a method to remove metals from an organic phase of a solution comprising the steps of: contacting the organic phase with an aqueous solution of a stripping agent, wherein the stripping agent comprises an organic amine carbonate solution, wherein the organic amine carbonate is guanidine. The complexant DTPA is mixed with the stripping agent (Column 7).

Romanovskiy does not expressly state that the amine is recovered by distillation or that the amine carbonate is regenerated.

Bruschke teaches the azeotropic distillation of amine solution comprising pyridine and water (Fig. 11). At the time of invention, it would have been obvious to a person of ordinary skill in the art to form the process of Romanovskiy to include the steps of recovering the amine by distillation, regenerating the amine carbonate and recycling the amine carbonate back to the stripping step in view of the teaching of Bruschke. The suggestion or motivation for doing so would have been to reduce the cost associated with the stripping agent materials.

**Claims 1-3, 5-7 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over over Romanovskiy '333 in view of Hartmut Bruschke "Industrial application of membrane separation processes" (Pure & Appl. Chem., Vol. 67 No. 6, pp. 993-1002, 1995) and Gustafson '918.**

Romanovskiy teaches a method to remove metals from an organic phase of a solution comprising the steps of: contacting the organic phase with an aqueous solution of a stripping agent, wherein the stripping agent comprises an organic amine carbonate solution, wherein the organic amine carbonate is guanidine. The complexant DTPA is mixed with the stripping agent (Column 7).

Romanovskiy does not expressly state that the amine is recovered by distillation or a step of bubbling carbon dioxide gas through the organic amine at a temperature of between about 35 degrees C to about 60 degrees C to regenerate the amine carbonate.

Bruschke teaches the azeotropic distillation of amine solution comprising pyridine and water (Fig. 11). Gustafson discloses a process of removing carbon dioxide from a gas stream using an amine to form an amine carbonate (Column 2), showing that amines in the presence of carbon dioxide form amine carbonates. Gustafson does not disclose the temperature in which the carbon dioxide is introduced to the amine. However, it is well settled that determination of optimum values of cause and effective variables such as these process parameters are within the skill of one practicing in the art. In re Boesch, 205 USPQ 215 (CCPA 1980).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to form the process of Romanovskiy to include the steps of recovering the amine by distillation, of bubbling carbon dioxide gas through the organic amine at a temperature of between about 35 degrees C to about 60 degrees C to regenerate the amine carbonate and recycling the amine carbonate back to the stripping step in view of

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the teaching of Bruschke and Gustafson. The suggestion or motivation for doing so would have been to reduce the cost associated with the stripping agent materials.

***Allowable Subject Matter***

Claims 4, 8-11, and 13-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Fiorito whose telephone number is (571)272-7426. The examiner can normally be reached on 9am - 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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